

Petr Stepanov

Materials science. Data analysis. Desktop and web applications development. UI/UX design.

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Summary of Qualifications

Work Experience

Research Collaborator (On-Site)

[Thomas Jefferson National Laboratory \(JLab\)](#), Newport News, VA, USA.

Jul 2020 - Current

Postdoctoral Researcher (Remote)

[Catholic University of America \(CUA\)](#), Washington, DC, USA.

Jul 2020 - Current

Research Assistant

[Bowling Green State University \(BGSU\)](#), Bowling Green, OH, USA.

Aug 2014 - May 2020

Frontend Developer, UI/UX Designer • Freelance

Sep 2012 - Current

Full Stack Web Developer, Web Designer

[Gridnine Systems](#), Moscow, Russia.

Apr 2011 - Aug 2014

Computer Science Teacher

[Phys-Tech College at MIPT](#), Moscow, Russia.

Oct 2009 - May 2011

- Provided instructions and guidance to high school students on following computer courses: C/C++ programming, HTML, Adobe Photoshop and 3D Studio Max.

Research Scientist

[Institute for Theoretical and Experimental Physics \(ITEP\)](#), Moscow, Russia.

Sep 2008 - Apr 2011

- Application of positron lifetime spectroscopy for studying the radioactive-induced defects in steels. Monte-Carlo particle simulations with Fortran 95. Maintaining software for CAMECA tomographic atom probe (MSVC). Application of CERN ROOT libraries for fitting and analysis of experimental spectra.

Computer Science Skills

- **Essentials.** Git, SVN, SSH, Linux, and Terminal usage. BASH scripting. IDEs: Eclipse, Xcode, Visual Studio Code (VS Code).
- **Project management.** JIRA, Trello, GitHub, GitLab.
- **Simulation and data analysis:** Geant4, CERN ROOT, MATLAB, Wolfram Mathematica, Maple.
- **Academic writing:** LaTeX, MS Office Suite, Zotero.
- **Data plotting:** Gnuplot, OriginLab, QtiPlot, SciDaVis, Grapher.
- **Desktop app development.** C/C++, GNU make, CMake. Frameworks: Qt, CERN ROOT, Geant4. Java and Swing. Python.
- **Frontend:** HTML, CSS (LESS and SASS), Bootstrap, responsive web design, JavaScript and jQuery, npm, gulp, AngularJS, React.js. Google Web Toolkit. PHP and WordPress themes development.
- **Backend.** Node.js, Express.JS (EJS), Java.
- **UI/UX design.** Figma, Sketch, InVision Studio, Adobe XD, Adobe Photoshop, Adobe Illustrator, Inkscape, Blasamiq, Blender.
- **Apple iOS.** Fundamental Swift skills. User interface development with UIKit and storyboards.

Material Research Skills

- **Characterization facilities.** Positron Lifetime and Doppler Broadening Annihilation Spectroscopy (PALS, DBAR). Atom Probe Tomography (ATP). Scanning Electron Microscopy (SEM). Transmission electron microscopy (TEM). Atomic Force Microscopy (AFM). UV-VIS Spectroscopy. Fourier Transform Infrared Spectroscopy (FTIR).

- **Material processing.** High-temperature annealing. Wet chemical etching. Electrical Contact Fabrication. Sample polishing.

Education

Bowling Green State University (BGSU) • Ohio, USA

Aug 2014 - May 2020

Ph.D. in Photochemical Sciences • GPA 3.423. Novel developments in positron annihilation spectroscopy techniques—from experimental setups to advanced processing software. [View manuscript](#).

- Application of positron lifetime spectroscopy for studying the radioactive-induced defects in steels. Monte-Carlo particle simulations with Fortran 95. Maintaining software for CAMECA tomographic atom probe (MSVC). Application of CERN ROOT libraries for fitting and analysis of experimental spectra.
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Ohio Supercomputer Workshop • Ohio, USA

Jan 2017 - Feb 2017

Hands-on sessions in Supercomputer Essentials. Introduction to the key developments in the supercomputer field.

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British Higher School of Art and Design (BHSAD) • Moscow, Russia

Dec 2011 - Feb 2012

Three-month intensive in Graphical Design and Visual Communications. Lectures and hands-on experience in graphic design and user interfaces.

- Application of positron lifetime spectroscopy for studying the radioactive-induced defects in steels. Monte-Carlo particle simulations with Fortran 95. Maintaining software for CAMECA tomographic atom probe (MSVC). Application of CERN ROOT libraries for fitting and analysis of experimental spectra.

National Research Nuclear University (MEPhI) • Moscow, Russia

Aug 2014 - May 2020

B.S. and M.S. in Solid State Physics. Defect studies of neutron-irradiated nuclear power plant vessel steels by means of positron annihilation spectroscopy.

Featured Publications

- P. S. Stepanov, F. A. Selim et al. Interaction of positronium with dissolved oxygen in liquids. *Physical Chemistry Chemical Physics* **2020**, 22 (9), 5123-5131. [10.1039/c9cp06105c](https://doi.org/10.1039/c9cp06105c).
- P. S. Stepanov, F. A. Selim et al. A model for joint processing of LT and CDB spectra of dielectric nano-sized powders. *AIP Conference Proceedings* **2182** **2019**. [10.1063/1.5135836](https://doi.org/10.1063/1.5135836).
- P Saadatkia, P Stepanov et al. Photoconductivity of bulk SrTiO₃ single crystals at room temperature. *Materials Research Express* **2018**, 5 (1), 016202. [10.1088/2053-1591/aaa094](https://doi.org/10.1088/2053-1591/aaa094).
- P.S. Stepanov, S.V. Stepanov et al. Developing New Routine for Processing Two-Dimensional Coincidence Doppler Energy Spectra and Evaluation of Electron Subsystem Properties in Metals. *Acta Physica Polonica A* **2017**, 132 (5), 1628-1633. [10.12693/aphyspola.132.1628](https://doi.org/10.12693/aphyspola.132.1628).
- J. Ji, A. M. Colosimo et al. ZnO Luminescence and scintillation studied via photoexcitation, X-ray excitation and gamma-induced positron spectroscopy. *Scientific Reports* **2016**, 6 (1). [10.1038/srep31238](https://doi.org/10.1038/srep31238).

Conferences

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| 18th International Conference on Positron Annihilation (ICPA-18)
Orlando, FL, USA
Oral talk "Positions and Ps in Al ₂ O ₃ Nanopowders" | Aug 2018 |
| International Workshop on Physics with Positrons (JPos17)
JLab, Newport News, VA, USA
Poster "A routine of background subtraction from two-dimensional Doppler broadened spectra" | Sept 2017 |
| 12th International Workshop on Positron and Positronium Chemistry (PPC12)
Maria Curie-Sklodowska University, Lublin, Poland
Poster "Developing new routine for processing two-dimensional coincidence Doppler energy spectra" | Sept 2017 |
| Ohio Photochemical Society Meeting (Oops)
Maumee Bay Lodge & Conference Center, Maumee, OH, USA
Poster "Developing new routine for background subtraction in two-dimensional coincidence Doppler broadening spectroscopy" | May 2017 |
| 58th Electronic Materials Conference (EMC)
University of Delaware, Newark, DE, USA
Oral talk "High-Sensitivity Measurements of Defects in ZnO by Means of Digital Coincidence Doppler Broadening of Positron Annihilation Spectroscopy" | Jun 2016 |
| Annual Spring Meeting of the APS Ohio-Region
University of Dayton, Dayton, OH, USA
Oral talk "Identification of chemical environment of defects in ZnO by means of digital coincidence Doppler broadening of positron annihilation radiation" | Apr 2016 |
| Ohio Inorganic Weekend
Bowling Green State University, OH, USA
Poster "Approaching Structural Defect Characterization and their Chemical Identification by Means of Coincidence Doppler Broadening of Annihilation Radiation" | Nov 2015 |
| 41st Polish Seminar on Positron Annihilation (PSPA-13)
Maria Curie-Sklodowska University, Lublin, Poland
Oral talk "Application of positron spectroscopy for detection of nanostructures in alcohol—aqueous mixtures" | Sep 2013 |

Professional Networks

- Discover my professional contacts [on LinkedIn](#) (200+ connections).
- Get familiar with my scientific career [on ResearchGate](#).
- Skim through the list of my publications [on Google Scholar](#) (24 articles, 200+ citations).
- Find examples of my code [on GitHub](#) (50+ repositories).
- Check out my UI design portfolio [on Dribbble](#) (50+ shots).

Interests

Linux and open-source software. Hosting an [open-source project](#) aimed at keyboard remapping under Linux (over 250 stars on GitHub).